

REMARKS

Claims 1-18 are pending in the present application, and stand rejected. This application continues to include claims 1-18.

Claims 1-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Courtney, et al. (5,139,339) in view of Butler, et al. (4,950,905). Reconsideration of the rejection of claims 1-12 is respectfully requested.

Claim 1 recites, in part, **“a media support surface, and a first normal line extending perpendicular to a plane of said media support surface; a light source positioned at a first angle with respect to said first normal line, said light source producing a light beam; a light detector positioned at a second angle with respect to said first normal line, said light source and said light detector being positioned on opposite sides of said first normal line, said light detector providing an output; a reflective surface formed near said media support surface, and a second normal line extending perpendicular to said reflective surface, said first normal line and said second normal line being non-parallel, said reflective surface being formed at a third angle with respect to said plane of said media support surface, said light source and said light detector being positioned in relation to said reflective surface such that when a sheet of print media covers said reflective surface, a reflected specular light component of said light beam is received by said light detector, and when said reflective surface is not covered, said reflective surface directs the reflected specular light component of said light beam away from said light detector, said output of said light detector providing an indication of a presence or an absence of said sheet of print media”** (Emphasis added).

In rejecting Applicants' claims, the Examiner relies on element 35 of Courtney, et al. as corresponding to the recited “media support surface”. However, Courtney, et al. discloses at

column 3, lines 30-38, that element 35 is “media surface 35”, e.g., a surface of a paper, and discusses the use of a non-reflective surface for the target in a “media absent condition”. Accordingly, it is respectfully submitted that the basis for applying Courtney, et al. in rejecting Applicants’ claims 1-12 is flawed.

Further, the Examiner relies on Courtney, surfaces (14, 38) as corresponding to the recited “reflective surface”. However, claim 1 recites, in part, “when said reflective surface is not covered, said reflective surface directs the reflected specular light component of said light beam away from said light detector....” (Emphasis added). In Courtney, et al., each embodiment (see Figs. 1 and 3) including surface 14 directs light from the light source 12 to light detector 16 in the absence of paper 18, rather than away from light detector 16. As to surface 38, shown in Courtney, et al. Fig. 8, surface 38 does not direct the light beam from light source 31 away from light detector 33, but rather, the light beam proceeds unimpeded by surface 38 through an opening.

Further, the Examiner recognizes that Courtney, et al. “fail to explicitly teach a second normal line perpendicular to reflective surface and non parallel to first normal line corresponding to a third angle relative to the plane of media support surface.” For this, however, the Examiner relies on Butler, et al. Fig. 1 and column 4, lines 26-67 for allegedly disclosing “a second normal line perpendicular to reflective surface and non parallel to first normal line (15) corresponding to a third angle (α) relative to the plane of media support surface 10.” However, the Examiner’s conclusion is not consistent with Applicants’ claim language and appears to be a misapplication of Butler, et al. with respect to Applicants’ claims.

As a first point, Applicants’ claim 1 recites “said reflective surface being formed *at a third angle* with respect to said plane of said media support surface”, not “a second normal line

perpendicular to reflective surface and non parallel to first normal line (15) corresponding to a third angle (α) relative to the plane of media support surface 10”, as asserted by the Examiner.

As a second point, Butler, et al. is directed to measuring the amount of unfused toner developed onto a substrate (see Butler, et al. column 1, lines 5-8). Fig. 1 and column 4, lines 26-67 from Butler, et al. relied on by the Examiner discloses an imaging surface 10 having toner 12. Accordingly, within the context of claim 1, imaging surface 10 having toner 12 is not a media support surface as asserted by the Examiner, but rather, imaging surface 10 would be the surface of the sheet of print media itself, e.g., paper, that receives an imaging substance, e.g., toner 12.

Applicants’ claim 1 recites, in part, a media support surface, a reflective surface formed near the media support surface, and that the sheet of print media is positioned to cover the reflective surface (and the media support surface) under certain conditions. In particular, claim 1 recites in part that “**the second normal line extends perpendicular to said reflective surface, said first normal line and said second normal line being non-parallel, and said light source and said light detector are positioned in relation to said reflective surface such that when a sheet of print media covers said reflective surface**, a reflected specular light component of said light beam is received by said light detector....” Thus, the imaging surface 10 of Butler, et al. not only does not correspond to the recited media support surface, the imaging surface of Butler, et al. also does not correspond to the reflective surface recited in Applicants’ claim 1.

Butler fails to disclose any media support such that *a first normal line extends perpendicular to a plane of said media support surface, and the second normal line extends perpendicular to said reflective surface, said first normal line and said second normal line being non-parallel*. In Butler, et al., the line at angle (α) clearly is not perpendicular to the imaging

surface 10 and toner 12, since normal line 15 is perpendicular to the imaging surface 10 and toner 12.

Additionally, the Examiner relies on the combination of Butler, et al. with Courtney, et al. In this regard, Figs. 1 and 3 of Courtney, et al. show paper 18 in relation to a support surface 14, and paper 18 is parallel to support surface 14. Further, in comparing Figs. 1 and 8 of Courtney, et al., surface 38 would also be parallel to paper 18. The combination of Butler, et al. disclosing imaging surface 10 as a media support surface with any of the embodiments of Courtney, et al. including support surface (14, 38) would yield a combination having a single normal line, i.e., a normal that is perpendicular to surface (14, 38) of Courtney, et al. as the same as, or parallel to, the normal line 15 of Butler, et al. In contrast, in Applicants' claim 1, the two normal lines are explicitly non-parallel, i.e., "said first normal line and said second normal line being non-parallel."

Thus, Courtney, et al. in view of Butler, et al. also does not disclose, teach or suggest a configuration having "a reflective surface formed near said media support surface", and "a second normal line extending perpendicular to said reflective surface, said first normal line [that extends perpendicular to a plane of said media support surface] and said second normal line being non-parallel, said reflective surface being formed at a third angle with respect to said plane of said media support surface", as recited in claim 1.

In view of the above, Applicants respectfully submit that Courtney, et al. in view of Butler, et al. does not disclose, teach or suggest the subject matter of claim 1, and thus, claim 1 is patentable in its present form.

Claims 2-4 are believed patentable in view of their dependence from otherwise allowable base claim 1.

Claim 5 is believed patentable for substantially the same reasons set forth above with respect to claim 1.

Claims 6-8 are believed patentable in view of their dependence from otherwise allowable base claim 5.

Claim 9 is believed patentable for substantially the same reasons set forth above with respect to claim 1.

Claims 10-12 are believed patentable in view of their dependence from otherwise allowable base claim 9.

Therefore, in view of the above, Applicants respectfully request that the Examiner withdraw the rejection of claims 1-12 under 35 U.S.C. 103(a) as being unpatentable over Courtney, et al. in view of Butler, et al.

Claims 13-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Courtney, et al. Reconsideration of the rejection of claims 13-18 is respectfully requested.

Claim 13 recites, in part, “said controller determining a signal strength of said output from said light detector, wherein the signal strength of said output from said light detector when receiving a diffuse light component reflected from said reflective surface is less than the signal strength of said output from said light detector when receiving a reflected specular light component that is reflected from a low reflectance print media, said controller determining a presence or an absence of a sheet of print media based on said signal strength of said output from said light detector.”

However, in Courtney, et al., as disclosed in the chart and accompanying text at column 3, lines 43-57, sensor 30 uses digital logic from two detectors (see Figs. 4-9), i.e., the normal detector 32 (high, low, don’t care) and from the angle detector 33 (high, low), for media

discriminating. As such, Courtney, et al. does not disclose, teach, or suggest determining a presence or an absence of a sheet of print media based on the signal strength of the output from a particular light detector.

Also, in claim 13 the same detector is used for both receiving a diffuse light component reflected from said reflective surface and receiving a reflected specular light component that is reflected from a low reflectance print media in “determining a presence or an absence of a sheet of print media based on said signal strength of said output from said light detector.” In contrast, in Courtney, et al, as set forth in the chart and accompanying text at column 3, lines 43-57 (see also Figs. 4-9), the output logic of sensor 30 requires processing the output from the two detectors (normal detector 32 and angle detector 33) for media discriminating. As such, Courtney, et al. does not disclose, teach, or suggest using the same detector for both receiving a diffuse light component reflected from the reflective surface and receiving a reflected specular light component that is reflected from a low reflectance print media in “determining a presence or an absence of a sheet of print media based on said signal strength of said output from said light detector”, as recited in claim 13.

Accordingly, claim 13 is believed patentable in its present form.

Claims 14 and 15 are believed patentable in view of their dependence from otherwise allowable base claim 13.

Claim 16 is believed patentable in view of its dependence from otherwise allowable base claim 13. In addition, claim 16 is believed patentable in its own right.

In rejecting claim 16, the Examiner relies on Courtney, et al. Fig. 3, and column 3, lines 6-30. Claim 16 recites, “The apparatus of claim 13, wherein when said sheet of print media covers said reflective surface, said reflected specular light component of said light beam is received by

said light detector, and when said reflective surface is not covered, said reflective surface directs said reflected specular light component of said light beam away from said light detector, said output of said light detector providing an indication of said presence or said absence of said sheet of print media.” (Emphasis added). However, in Courtney, et al. each embodiment (see Fig. 1 and 3) including surface 14 directs light from the light source 12 to the detector 16 in the absence of paper 18, rather than away from light detector 16, as required in claim 16.

Accordingly, claim 16 is believed patentable in its own right.

Claim 17 is believed patentable in view of its dependence from otherwise allowable base claim 13.

Claim 18 is believed patentable in view of its dependence from otherwise allowable base claim 13. In addition, claim 18 is believed patentable in its own right.

Claim 18 recites, “The apparatus of claim 13, said light detector being the sole light detector in said media sensor.”

In rejecting claim 18, the Examiner states that “Courtney et al disclose light detector (31) as being the sole light detector in media sensor (30), (see figure 4, column 3, lines 30-40).” However, upon review of Courtney, et al. Fig. 4 and column 3, lines 30-40, it is apparent that media sensor 30 includes “two detectors 32 and 33”, a long with a “light source 31”. (Emphasis added).

Accordingly, claim 18 is believed patentable in its present form.

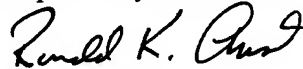
Therefore, in view of the above, Applicants respectfully request that the Examiner withdraw the rejection of claims 13-18 under 35 U.S.C. 103(a) as being unpatentable over Courtney, et al.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the pending claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorize that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (317) 894-0801.

Respectfully submitted,



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Date
